



CUSTOM Systems del Norte, S.A. de C.V.

High Voltage Power Cable

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Company Overview

Ningbo Qrunning Cable Co., Ltd. is a nationally recognized high-tech enterprise specializing in the production of wires and cables. Established in 1990, the company boasts total assets of 1.5 billion yuan and employs over 800 people, including more than 120 senior and intermediate technical professionals. It houses a provincial enterprise engineering technology R&D center, completing over twenty scientific research projects annually, and holds numerous patents.

The company has established sales and service networks in 30 provinces, municipalities, and autonomous regions across China, including Beijing, Guangdong, Shanghai, Tianjin, Yunnan, Inner Mongolia, Guangxi, and Sichuan. Its products, covering low, medium, high, and ultra-high voltage levels, are widely used in the State Grid, Southern Power Grid, rail transit, steel, petrochemical, shipbuilding, machinery manufacturing, and other fields, earning widespread customer recognition and high praise.

Ningbo Qrunning Cable Co., Ltd.'s high voltage cable plant spans 504 acres and features world-class cable manufacturing and testing equipment, including Finland's MAILLEFER 500kV vertical three-layer co-extrusion cross-linking production line, UK's BWE aluminum sheath production line, frequency conversion distributed motor 91-disk frame stranding machine, double-layer co-extrusion sheath production line, Germany's HAIVOT voltage withstand and partial discharge series resonance test system, and a high-quality fully shielded partial discharge test hall. These advanced production technologies provide a solid foundation for the research and manufacturing of high-quality high and ultra-high voltage cables.

The company produces ultra-high and high voltage cables across a range of voltage levels, including 500kV, 220kV, 110kV, and 66kV, adhering to international, national, industry standards, or customer-specific technical quality requirements.

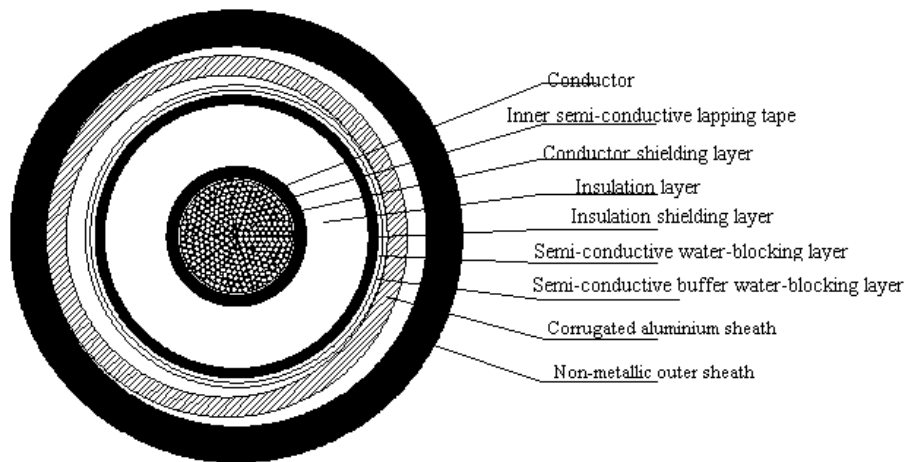
The company's ISO9001-2008 quality management system, GB/T24001-2004 environmental management system, and GB/T28001-2001 occupational health and safety system have been certified and operational for years. A dedicated system management department oversees the effective daily operation of these systems, ensuring reliable and continuously improving product quality.

Ningbo Qrunning Cable Co., Ltd. regards product quality reliability as the primary concern for ultra-high and high voltage cables. It emphasizes strict quality control to meet the diverse needs of different customers, ensuring that the final delivered product fully meets customer requirements through meticulous material selection, structural design, process implementation, process control, and performance testing.

All employees adhere to the philosophy of "Quality First, Supreme Quality," striving for progress and continuous development, committed to serving customers wholeheartedly and contributing to the nation's construction and development.

Cable Product Introduction

➤ Product Structure Diagram



★ **Conductor:** The conductor meets the specifications of GB/T3956, with a copper purity of over 99.9%, enhancing the cable's transmission capacity.

★ **Inner and Outer Shields:** Made from imported ultra-smooth non-peelable cross-linked polyethylene cable material, extruded in three layers with the insulation material to ensure smooth surfaces and uniform electric field distribution.

★ **Insulation:** Uses imported ultra-clean XLPE material, co-extruded with the inner and outer shields for tight bonding. The most advanced secondary heating production process effectively eliminates internal stress in the insulation.

★ Buffer Layer and Longitudinal Water Blocking Structure: Made of semi-conductive elastic material or longitudinally water-blocking semi-conductive swelling tape, meeting water-blocking requirements while ensuring the gap between the layer and the corrugated aluminum sheath.
★ Metal Shield: Uses a corrugated aluminum sheath to meet short-circuit capacity and shielding needs, providing radial water-blocking performance for high water level environments.
★ Asphalt Coating: Special cable asphalt coating provides effective corrosion protection for the aluminum sheath, extending the cable's lifespan.
★ Outer Sheath: Made from high-quality domestic PVC and PE materials, meeting electrical and mechanical performance requirements. Developed in collaboration with renowned domestic material manufacturers, various high-quality special outer sheath materials are available, such as flame-retardant and termite-resistant types.

➤ Product Standards

66kV cross-linked polyethylene insulated power cable products are manufactured according to GB/T 11017-2002 and IEC60840 standards.

110kV cross-linked polyethylene insulated power cable products are manufactured according to GB/T 11017-2002 and IEC60840 standards.

220kV cross-linked polyethylene insulated power cable products are manufactured according to GB/Z 18890-2002 and IEC62067 standards.

➤ Cable Model

Model	Product Name	Applicable Range and Environment
YJLW02	Copper-core cross-linked polyethylene insulated corrugated aluminum sheath PVC sheathed power cable	Indoor, tunnel, pipeline, cable trench, or direct burial, capable of withstanding certain mechanical forces and tension.
YJLW03	Copper-core cross-linked polyethylene insulated corrugated aluminum sheath PE sheathed power cable	
YJLLW02	Aluminum-core cross-linked polyethylene insulated corrugated aluminum sheath PVC sheathed power cable	Indoor, tunnel, pipeline, cable trench, or direct burial, capable of withstanding certain mechanical forces and tension.
YJLLW03	Aluminum-core cross-linked polyethylene insulated corrugated aluminum sheath PE sheathed power cable	
YJLW02-Z	Copper-core cross-linked polyethylene insulated corrugated aluminum sheath PVC sheathed longitudinal water-blocking power cable	Indoor, tunnel, pipeline, cable trench, or direct burial, suitable for humid environments and high groundwater levels, capable of withstanding certain mechanical forces and tension.
YJLW03-Z	Copper-core cross-linked polyethylene insulated corrugated aluminum sheath PE sheathed longitudinal water-blocking power cable	
YJLLW02-Z	Aluminum-core cross-linked polyethylene insulated corrugated aluminum sheath PVC sheathed longitudinal water-blocking power cable	Indoor, tunnel, pipeline, cable trench, or direct burial, suitable for humid environments and high groundwater levels, capable of withstanding certain mechanical forces and tension.
YJLLW03-Z	Aluminum-core cross-linked polyethylene insulated corrugated aluminum sheath PE sheathed longitudinal water-blocking power cable	
YJA02	Copper-core cross-linked polyethylene insulated aluminum-plastic composite layer PVC sheathed power cable	Indoor, tunnel, pipeline, or cable trench.
YJA03	Copper-core cross-linked polyethylene insulated aluminum-plastic composite layer PE sheathed power cable	

Note: Based on user requirements and installation conditions, low-smoke low-halogen, low-smoke halogen-free, flame-retardant, rodent-resistant, termite-resistant, and other types of outer sheaths can be produced. To better monitor the cable and ensure its normal operation, we can also produce cables with built-in temperature-sensing optical fibers.

➤ **Usage Characteristics**

- Rated Voltage U_0/U : 48/66kV, 64/110kV, 127/220kV.
- Maximum continuous operating temperature of the conductor: 90°C.
- Maximum temperature during short circuit (maximum duration no more than 5 seconds): 250°C.
- Minimum ambient temperature during cable laying: not less than 0°C.
- Minimum bending radius: not less than 20 times the cable diameter.

Overview of Production Equipment and process

LH450/13 Sliding Copper Continuous Annealing Unit

1. Uses 630 reel take-up with highly stable dual-reel automatic switching for long-length continuous stable production.
2. The entire system adopts a new generation PLC control mode, ensuring good quality, uniform size, mechanical properties, and conductivity of copper wire in different production states.
3. Equipped with process parameter storage and recall function, making it convenient to reproduce verified copper wire quality, beneficial for quality control.

90-Disk AC Variable Frequency Control Frame Stranding Machine

1. Allows for arbitrary stranding pitch according to quality requirements.
2. The segmented conductor stock stranding pre-twist forming adopts ground shaft drive, rigidly ensuring precise pre-twist pitch.
3. Power shared by the bus ensures synchronous operation of all components, solving traditional problems of stranding pitch variation or over-twisting due to equipment start-stop and power supply anomalies.
4. Conducts semi-conductive and protective tape wrapping simultaneously during stranding, avoiding issues of stranding looseness and tape layer damage.

Φ3150 Disk Stranding Cable Forming Machine

1. It is capable of manufacturing split conductors with a cross-sectional range of 800 - 3000 mm² and a continuous manufacturing length of 1100 - 3500 meters.
2. Uses a programmable controller and Profibus field bus to coordinate startup, operation, and synchronization.
3. Five-group centralized phase detection ensures uniform and stable continuous quality of segmented conductors.

Maillefer VCV Cross-linking Line

1. Capable of manufacturing cross-linked cables with voltage levels of 110~500kV and cross-sectional areas ranging from 240 to 3000mm².
2. The cross-linking type uses a vertical U-shaped cross-linking tube, equipped with front and rear conductor induction heaters. The cross-linking zone is 36 meters long, and the cooling zone is 131 meters long. The process is determined by the NCC cross-linking software.
3. The feeding method is gravity insulation feeding, with the feeding environment transitioning progressively from "ten-thousand level" to "thousand level" to "hundred level" clean room standards, utilizing the Motan drying treatment system for shielded feeding.
4. Online X-ray measurement detection employs the SIKORA EX-RAY 8000 eccentricity measuring instrument.

Flow-Through Degassing Oven Room

1. The company holds a patent for the flow-through air distribution design, ensuring uniform temperature distribution within the oven room, making the removal of by-products from the cable insulation reliable.
2. The monitoring and measurement of temperature within the oven room are conducted through a human-machine interface, allowing real-time temperature control and monitoring inside the oven.
3. The degassing parameters of the oven room are automatically stored using specialized software, which collects real-time operational data, forms trend charts, and creates electronic records for easy query and computer storage.

British BWE Aluminum Extruder

150-Type Dual-Layer Co-Extrusion Plastic Sheath Extrusion Line

1. Capable of single-layer or dual-layer cable sheathing, such as PE/PVC or plastic

sheath/semi-conductive extrusion layer co-extrusion.

2. Allows for aluminum sheath anti-corrosion asphalt coating and graphite conductive layer coating.

German HIGHVOLT Company HV AC Series Resonance, PD Detection, Fault Location, and Capacitance and Loss Factor Measurement System

1. · Rated voltage: 700kV (series), 350kV (parallel), rated current: 30/60A (series/parallel), rated power: 21000 kVA.
2. · The detection and fault location instrument can detect apparent charges of 0.1~1000 pC, with a PD resolution of 10ns and a positioning error of $1 \pm 0.1\%$.
3. · Capable of detecting cable lengths up to 5km.
4. · Loss factor (tan delta) measurement range: $1 \times 10^{-5} \sim 1$, with a measurement error of no more than $\pm 0.05\%$.
5. · Capacitance measurement range: $0.1 \times \text{CN} \dots 1000 \times \text{CN}$, with a measurement error of no more than $\pm 0.01\%$.

Shielded Test Hall

1. Space dimensions: 30 meters long, 20 meters wide, 15 meters high.
2. Background noise level in the hall: 0.5 pC.

Main Technical Parameters of the Cable

➤ 66kV Power Cable

YJLW02、YJLW03、YJLW02-Z、YJLW03-Z Main structural parameters

Nominal cross-section	Conductor outer diameter	Conductor shield thickness	Insulation thickness	Insulation shield thickness	Corrugated Aluminum Sheath Thickness	Outer Sheath Thickness	Approximate Cable Outer Diameter	Approximate Cable Weight(kg/km)	
mm ²	mm	mm	mm	mm	mm	mm	mm	PVC sheath	PE sheath
240	18.4	1.5	14.0	1.0	2.0	4.0	81.7	7211	6716
300	20.6	1.5	14.0	1.0	2.0	4.0	83.9	7953	7445
400	23.2	1.5	14.0	1.0	2.0	4.0	86.5	8937	8412
500	26.5	1.5	14.0	1.0	2.0	4.0	90.8	10277	9726
630	30.1	1.5	14.0	1.0	2.0	4.5	95.4	12123	11490
800	34.1	1.5	14.0	1.0	2.0	4.5	99.6	14113	13450
1000	38.0	1.5	14.0	1.0	2.3	4.5	104.7	16823	16125
1200	41.7	1.5	14.0	1.0	2.3	5.0	109.4	19054	18220
1400	46.6	1.5	14.0	1.0	2.3	5.0	114.3	21348	20488
1600	48.5	1.5	14.0	1.0	2.3	5.0	116.6	23399	22520
1800	51.5	1.5	14.0	1.0	2.3	5.0	119.6	25426	24526
2000	53.8	1.5	14.0	1.0	2.3	5.0	121.9	27641	26721
2500	60.8	1.5	14.0	1.0	2.3	5.0	128.9	32561	31586

YJA02、YJA03 Main structural parameters

Nominal cross-section	Conductor outer diameter	Conductor shield thickness	Insulation thickness	Insulation shield thickness	Corrugated Aluminum Sheath Thickness	Outer Sheath Thickness	Approximate Cable Outer Diameter	Approximate Cable Weight(kg/km)	
mm ²	mm	mm	mm	mm	mm	mm	mm	PVC sheath	PE sheath
240	18.4	1.5	14.0	1.0	0.25	4.0	64.8	6376	6014
300	20.6	1.5	14.0	1.0	0.25	4.0	66.5	7229	6792
400	23.2	1.5	14.0	1.0	0.25	4.0	69.0	8131	7679
500	26.5	1.5	14.0	1.0	0.25	4.0	72.3	9371	8900
630	30.1	1.5	14.0	1.0	0.25	4.5	76.9	10255	9696
800	34.1	1.5	14.0	1.0	0.25	4.5	81.1	13315	12728
1000	38.0	1.5	14.0	1.0	0.25	4.5	85.0	15596	14980
1200	41.7	1.5	14.0	1.0	0.25	5.0	89.7	17691	16965
1400	46.6	1.5	14.0	1.0	0.25	5.0	94.6	21719	20956
1600	48.5	1.5	14.0	1.0	0.25	5.0	96.5	21872	21095
1800	51.5	1.5	14.0	1.0	0.25	5.0	98.7	25447	24654

2000	53.8	1.5	14.0	1.0	0.25	5.0	101.0	25633	24822
2500	60.8	1.5	14.0	1.0	0.25	5.0	108.0	30408	29545

YJLW02、YJLW03、YJLW02-Z、YJLW03-Z、YJA02、YJA03 Main electrical parameters

Nominal cross-section mm ²	Conductor resistance (Ω/km)		Capacitance (μF/km)
	Direct current resistance (20°C)	Alternating current resistance (90°C)	
240	0.0754	0.0971	0.155
300	0.0601	0.0779	0.165
400	0.0470	0.0615	0.178
500	0.0366	0.0488	0.193
630	0.0283	0.0388	0.210
800	0.0221	0.0289	0.230
1000	0.0176	0.0234	0.248
1200	0.0151	0.0204	0.266
1400	0.0129	0.0178	0.288
1600	0.0113	0.0159	0.297
1800	0.0101	0.0146	0.311
2000	0.0090	0.0133	0.322
2500	0.0073	0.0115	0.354

Positive and negative sequence impedance, zero sequence impedance

Nominal cross-section mm ²	Positive-negative sequence impedance (Ω/km)		Zero sequence impedance (Ω/km)	
	实部	虚部	实部	虚部
240	0.0971	0.1571	0.2450	0.6477
300	0.0779	0.1527	0.2258	0.6383
400	0.0615	0.1481	0.2094	0.6280
500	0.0488	0.1438	0.1967	0.6145
630	0.0388	0.1397	0.1867	0.6011
800	0.0289	0.1350	0.1768	0.5883
1000	0.0234	0.1319	0.1713	0.5758
1200	0.0204	0.1293	0.1683	0.5649
1400	0.0178	0.1256	0.1657	0.5530
1600	0.0159	0.1245	0.1638	0.5481
1800	0.0146	0.1226	0.1625	0.5414
2000	0.0133	0.1212	0.1612	0.5364



2500	0.0115	0.1175	0.1594	0.5222
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YJLW02、YJLW03、YJLW02-Z、YJLW03-Z Short Circuit Current Unit: kA

Nominal cross-section	Conductor	Metal Sheath	Conductor	Metal Sheath	Conductor	Metal Sheath
(mm ²)	1.0 (S)		2.0 (S)		3.0 (S)	
240	34.8	40.4	24.7	28.9	20.3	23.7
300	43.4	41.7	30.9	29.8	25.3	24.5
400	57.8	43.4	41.1	31.0	33.6	25.5
500	72.5	46.0	51.8	33.8	42.0	27.0
630	90.9	48.1	64.5	34.3	52.8	28.2
800	115.3	50.6	81.8	36.1	66.9	29.7
1000	144.0	60.9	102.1	43.4	83.5	35.7
1200	172.7	63.4	122.4	45.2	100.2	37.1
1400	201.4	66.9	142.8	47.7	116.8	39.2
1600	230.1	68.2	163.1	48.6	133.4	39.9
1800	258.8	70.2	183.4	50.1	150.0	41.1
2000	287.5	71.7	203.7	51.1	166.5	42.0
2500	359.2	76.4	254.4	54.5	208.0	44.7

YJA02、YJA03 Short Circuit Current Unit: kA

Nominal cross-section	Conductor	Metal Sheath	Conductor	Metal Sheath	Conductor	Metal Sheath
(mm ²)	1.0 (S)		2.0 (S)		3.0 (S)	
240	34.8	13.7	24.7	9.8	20.3	8.0
300	43.4	13.7	30.9	9.8	25.3	8.0
400	57.8	13.7	41.1	9.8	33.6	8.0
500	72.5	13.7	51.8	9.8	42.0	8.0
630	90.9	13.7	64.5	9.8	52.8	8.0
800	115.3	13.7	81.8	9.8	66.9	8.0
1000	144.0	13.7	102.1	9.8	83.5	8.0
1200	172.7	13.7	122.4	9.8	100.2	8.0
1400	201.4	13.7	142.8	9.8	116.8	8.0
1600	230.1	13.7	163.1	9.8	133.4	8.0
1800	258.8	13.7	183.4	9.8	150.0	8.0
2000	287.5	13.7	203.7	9.8	166.5	8.0
2500	359.2	13.7	254.4	9.8	208.0	8.0

Note: The cross-sectional area of the copper wire shielding layer is calculated based on 95 mm², but copper wire shielding with different cross-sections can be provided according to the user's requirements.

YJLW02、YJLW03、YJLW02-Z、YJLW03-Z Ampacity (reference value) Unit: A

Nominal cross-section mm ²	Laying in duct.		Bury in underground		In air	
	Parallel laying	Trifoil formation	Parallel laying	Trifoil formation	Parallel laying	Trifoil formation
240	511	494	576	545	716	717
300	575	556	649	613	816	818
400	653	632	737	697	942	945
500	739	716	836	790	1085	1090
630	834	809	943	893	1249	1258
800	930	906	1053	1000	1425	1440
1000	1065	1046	1065	1155	1669	1699
1200	1137	1122	1290	1239	1815	1857
1400	1210	1203	1374	1328	1975	2033
1600	1270	1269	1443	1402	2094	2167
1800	1318	1325	1498	1465	2203	2294
2000	1366	1381	1556	1527	2308	2415
2500	1434	1474	1634	1631	2499	2655

The calculation data above is based on the following laying assumptions:

1. A single circuit is used, with a cable spacing of 250mm.
2. The normal operating temperature of the conductor is 90° C, and the ambient temperature is 20° C.
3. The cable laying depth is 1000mm, and the soil thermal resistivity is 1.2 K.m/W.

➤ 110kV Electric Cable

YJLW02、YJLW03、YJLW02-Z、YJLW03-Z Main structural parameters

Nominal cross-section	Conductor outer diameter	Conductor shield thickness	Insulation thickness	Insulation shield thickness	Corrugated Aluminum Sheath Thickness	Outer Sheath Thickness	Approximate Cable Outer Diameter	Approximate Cable Weight(kg/km)	
mm ²	mm	mm	mm	mm	mm	mm	mm	PVC Sheath	PE Sheath
240	18.4	1.5	19.0	1.0	2.0	4.0	92.7	8496	7933
300	20.6	1.5	18.5	1.0	2.0	4.0	93.9	9138	8568
400	23.2	1.5	17.5	1.0	2.0	4.0	94.5	9882	9308
500	26.5	1.5	17.0	1.0	2.0	4.0	96.8	11080	10491
630	30.1	1.5	16.5	1.0	2.0	4.5	101.0	12862	12177
800	34.1	1.5	16.0	1.0	2.0	4.5	104.2	14730	14024
1000	38.0	1.5	16.0	1.0	2.3	4.5	109.1	17469	16728
1200	41.7	1.5	16.0	1.0	2.3	5.0	113.8	19721	18852
1400	46.6	1.5	16.0	1.0	2.3	5.0	118.7	22057	21149
1600	48.5	1.5	16.0	1.0	2.3	5.0	120.6	24101	23178
1800	51.5	1.5	16.0	1.0	2.3	5.0	123.6	26148	25202
2000	53.8	1.5	16.0	1.0	2.3	5.0	125.9	28374	27410
2500	60.8	1.5	16.0	1.0	2.3	5.0	132.9	33333	32313

YJA02、YJA03 Main structural parameters

Nominal cross-section	Conductor outer diameter	Conductor shield thickness	Insulation thickness	Insulation shield thickness	Corrugated Aluminum Sheath Thickness	Outer Sheath Thickness	Approximate Cable Outer Diameter	Approximate Cable Weight(kg/km)	
mm ²	mm	mm	mm	mm	mm	mm	mm	PVC Sheath	PE Sheath
240	18.4	1.5	19.0	1.0	0.25	4.0	74.8	7447	7025
300	20.6	1.5	18.5	1.0	0.25	4.0	75.5	8214	7724
400	23.2	1.5	17.5	1.0	0.25	4.0	76.0	8913	8419
500	26.5	1.5	17.0	1.0	0.25	4.0	78.3	10064	9557
630	30.1	1.5	16.5	1.0	0.25	4.5	81.9	10873	10281
800	34.1	1.5	16.0	1.0	0.25	4.5	85.1	13807	13194
1000	38.0	1.5	16.0	1.0	0.25	4.5	89.0	16131	15490

1200	41.7	1.5	16.0	1.0	0.25	5.0	93.7	18260	17504
1400	46.6	1.5	16.0	1.0	0.25	5.0	98.6	22316	21523
1600	48.5	1.5	16.0	1.0	0.25	5.0	100.5	22480	21673
1800	51.5	1.5	16.0	1.0	0.25	5.0	102.7	26071	25248
2000	53.8	1.5	16.0	1.0	0.25	5.0	105.0	26271	25430
2500	60.8	1.5	16.0	1.0	0.25	5.0	112.0	31086	30193

YJLW02、YJLW03、YJLW02-Z、YJLW03-Z、YJA02、YJA03 Main electrical parameters

Nominal cross-section mm ²	Conductor resistance (Ω/km)		Capacitance (μF/km)
	Direct current resistance (20°C)	Alternating current resistance (90°C)	
240	0.0754	0.0971	0.126
300	0.0601	0.0778	0.136
400	0.0470	0.0615	0.152
500	0.0366	0.0487	0.169
630	0.0283	0.0387	0.188
800	0.0221	0.0289	0.210
1000	0.0176	0.0234	0.224
1200	0.0151	0.0203	0.239
1400	0.0129	0.0177	0.259
1600	0.0113	0.0159	0.267
1800	0.0101	0.0145	0.279
2000	0.0090	0.0133	0.289
2500	0.0073	0.0115	0.317

Positive and negative sequence impedance, zero sequence impedance

Nominal cross-section mm ²	Positive and negative sequence impedance (Ω/km)		Zero sequence impedance (Ω/km)	
	Solid	Imaginary part	Solid	Imaginary part
240	0.0971	0.1650	0.2450	0.6318
300	0.0778	0.1598	0.2257	0.6242
400	0.0615	0.1537	0.2094	0.6169
500	0.0487	0.1478	0.1966	0.6065
630	0.0387	0.1433	0.1866	0.5940

800	0.0289	0.1378	0.1768	0.5826
1000	0.0234	0.1345	0.1713	0.5706
1200	0.0203	0.1318	0.1682	0.5600
1400	0.0177	0.1280	0.1656	0.5482
1600	0.0159	0.1266	0.1638	0.5439
1800	0.0145	0.1247	0.1624	0.5373
2000	0.0133	0.1232	0.1612	0.5324
2500	0.0115	0.1194	0.1594	0.5183

YJLW02、YJLW03、YJLW02-Z、YJLW03-Z Short Circuit Current Unit: kA

Nominal cross-section	Conductor	Metal Sheath	Conductor	Metal Sheath	Conductor	Metal Sheath
(mm ²)	1.0 (S)		2.0 (S)		3.0 (S)	
240	34.8	46.9	24.7	33.5	20.3	27.5
300	43.4	47.5	30.9	33.9	25.3	27.9
400	57.8	48.0	41.1	34.3	33.6	28.2
500	72.5	49.5	51.8	35.3	42.0	29.0
630	90.9	51.4	64.5	36.7	52.8	30.2
800	115.3	53.3	81.8	38.0	66.9	31.3
1000	144.0	63.9	102.1	45.5	83.5	37.4
1200	172.7	66.3	122.4	47.3	100.2	38.9
1400	201.4	69.6	142.8	49.6	116.8	40.7
1600	230.1	70.9	163.1	50.5	133.4	41.5
1800	258.8	72.9	183.4	52.0	150.0	42.7
2000	287.5	74.4	203.7	53.0	166.5	43.6
2500	359.2	79.0	254.4	56.4	208.0	46.3

YJA02、YJA03 Short Circuit Current Unit: kA

Nominal cross-section	Conductor	Metal Sheath	Conductor	Metal Sheath	Conductor	Metal Sheath
(mm ²)	1.0 (S)		2.0 (S)		3.0 (S)	
240	34.8	13.7	24.7	9.8	20.3	8.0
300	43.4	13.7	30.9	9.8	25.3	8.0
400	57.8	13.7	41.1	9.8	33.6	8.0
500	72.5	13.7	51.8	9.8	42.0	8.0
630	90.9	13.7	64.5	9.8	52.8	8.0

800	115.3	13.7	81.8	9.8	66.9	8.0
1000	144.0	13.7	102.1	9.8	83.5	8.0
1200	172.7	13.7	122.4	9.8	100.2	8.0
1400	201.4	13.7	142.8	9.8	116.8	8.0
1600	230.1	13.7	163.1	9.8	133.4	8.0
1800	258.8	13.7	183.4	9.8	150.0	8.0
2000	287.5	13.7	203.7	9.8	166.5	8.0
2500	359.2	13.7	254.4	9.8	208.0	8.0

Note: The cross-sectional area of the copper wire shielding layer is calculated based on 95 mm², but copper wire shielding with different cross-sections can be provided according to the user's requirements.

YJLW02、YJLW03、YJLW02-Z、YJLW03-Z Ampacity (reference value) Unit: A

Nominal cross-section mm ²	Laying in duct.		Bury in underground		In air	
	Parallel laying	Trifoil formation	Parallel laying	Trifoil formation	Parallel laying	Trifoil formation
240	505	489	565	535	712	714
300	569	551	637	604	812	814
400	647	627	727	688	937	941
500	733	711	825	782	1079	1086
630	827	804	932	885	1242	1252
800	922	900	1041	991	1426	1443
1000	1056	1038	1056	1145	1659	1691
1200	1126	1114	1275	1228	1803	1847
1400	1197	1193	1358	1316	1960	2021
1600	1255	1258	1425	1389	2077	2153
1800	1301	1313	1478	1450	2184	2279
2000	1348	1368	1534	1511	2287	2399
2500	1413	1459	1609	1613	2474	2635

The calculation data above is based on the following laying assumptions:

1. A single circuit is used, with a cable spacing of 250mm.
2. The normal operating temperature of the conductor is 90°C, and the ambient temperature is 20°C.
3. The cable laying depth is 1000mm, and the soil thermal resistivity is 1.2 K.m/W.

220kV Electric Cable

YJLW02、YJLW03、YJLW02-Z、YJLW03-Z Main structural parameters

Nominal cross-section	Conductor outer diameter	Conductor shield thickness	Insulation thickness	Insulation shield thickness	Corrugated Aluminum Sheath Thickness	Outer Sheath Thickness	Approximate Cable Outer Diameter	Approximate Cable Weight(kg/km)	
								PVC Sheath	PE Sheath
mm ²	mm	mm	mm	mm	mm	mm	mm		
400	23.2	1.8	27.0	1.0	2.4	5.0	124.7	14499	13542
500	26.5	1.8	27.0	1.0	2.4	5.0	128.0	15971	14988
630	30.1	1.8	26.0	1.0	2.4	5.0	130.2	17410	16410
800	34.1	1.8	25.0	1.0	2.4	5.0	132.4	19232	18215
1000	38.0	2.0	24.0	1.0	2.6	5.0	135.5	21789	20748
1200	41.7	2.0	24.0	1.0	2.6	5.0	139.2	23843	22772
1400	46.6	2.0	24.0	1.0	2.6	5.0	144.7	26359	25245
1600	48.5	2.0	24.0	1.0	2.6	5.0	146.6	28459	27330
1800	51.5	2.0	24.0	1.0	2.8	5.0	150.4	30902	29743
2000	53.8	2.0	24.0	1.0	2.8	5.0	152.7	33190	32013
2500	60.8	2.0	24.0	1.0	2.8	5.0	159.7	38530	37297

YJLW02、YJLW03、YJLW02-Z、YJLW03-Z Main Electrical Parameters

Nominal cross-section mm ²	Conductor resistance (Ω/km)		capacitance (μF/km)
	Direct current resistance (20°C)	Alternating current resistance (90°C)	
400	0.0470	0.0614	0.117
500	0.0366	0.0486	0.125
630	0.0283	0.0385	0.138
800	0.0221	0.0288	0.153
1000	0.0176	0.0233	0.169
1200	0.0151	0.0202	0.180
1400	0.0129	0.0176	0.193
1600	0.0113	0.0157	0.199
1800	0.0101	0.0143	0.207
2000	0.0090	0.0131	0.213
2500	0.0073	0.0113	0.232

Positive and negative sequence impedance, zero sequence impedance

Nominal cross-section mm ²	Positive and negative sequence impedance (Ω/km)		Zero sequence impedance (Ω/km)	
	Solid	Imaginary part	Solid	Imaginary part
400	0.0614	0.1697	0.2093	0.5806
500	0.0486	0.1641	0.1965	0.5701
630	0.0385	0.1581	0.1864	0.5609
800	0.0288	0.1519	0.1767	0.5515
1000	0.0233	0.1466	0.1712	0.5419
1200	0.0202	0.1431	0.1681	0.5333
1400	0.0176	0.1392	0.1655	0.5221
1600	0.0157	0.1377	0.1636	0.5181
1800	0.0143	0.1359	0.1622	0.5115
2000	0.0131	0.1343	0.1610	0.5070
2500	0.0113	0.1300	0.1592	0.4943

YJLW02、YJLW03、YJLW02-Z、YJLW03-Z Short Circuit Current Unit: kA

Nominal cross-section	Conductor	Metal Sheath	Conductor	Metal Sheath	Conductor	Metal Sheath
(mm ²)	1.0 (S)		2.0 (S)		3.0 (S)	
400	57.8	75.2	41.1	53.6	33.6	44.0
500	72.5	77.6	51.8	55.3	42.0	45.4
630	90.9	79.3	64.5	56.5	52.8	46.4
800	115.3	81.1	81.8	57.8	66.9	47.5
1000	144.0	89.4	102.1	63.7	83.5	52.3
1200	172.7	92.2	122.4	65.7	100.2	53.9
1400	201.4	96.3	142.8	68.6	116.8	56.3
1600	230.1	97.8	163.1	69.6	133.4	57.2
1800	258.8	108.0	183.4	76.9	150.0	63.1
2000	287.5	109.9	203.7	78.3	166.5	64.2
2500	359.2	115.5	254.4	82.3	208.0	67.5

YJLW02、YJLW03、YJLW02-Z、YJLW03-Z Ampacity (reference value) Unit: A

Nominal cross-section mm ²	Laying in duct.		Bury in underground		In air	
	Parallel laying	Trifoil formation	Parallel laying	Trifoil formation	Parallel laying	Trifoil formation
400	631	615	702	669	935	942
500	711	695	792	757	1073	1084
630	799	785	893	857	1230	1248
800	888	877	996	959	1400	1427
1000	1011	1011	1011	1107	1635	1681
1200	1073	1081	1209	1186	1769	1832
1400	1134	1155	1281	1269	1914	1999
1600	1225	1230	1385	1354	1976	2047
1800	1220	1265	1382	1392	2121	2249
2000	1258	1315	1428	1447	2217	2365
2500	1309	1396	1489	1540	2384	2589

The calculation data above is based on the following laying assumptions:

1. A single circuit is used, with a cable spacing of 250mm.
2. The normal operating temperature of the conductor is 90°C, and the ambient temperature is 20°C.
3. The cable laying depth is 1000mm, and the soil thermal resistivity is 1.2 K.m/W.

High voltage XLPE insulatin electric cable YJLW02、YJLW03、YJLW02-Z、YJLW03-Z Ampacity correction coefficient (reference value)

Burial depth (m)	0.5	0.7	0.9	1.0	1.2	1.5	2.0
Revising coefficient	0.08	1.04	1.01	1.00	0.97	0.95	0.91

Effect of thermal resistivity of soil

Thermal resistance (K.m/W)	0.6	0.8	1.0	1.2	1.5	2.0	3.0
Revising coefficient	1.21	1.12	1.06	1	0.93	0.84	0.72

Effect of soil temperature

Ambient temperature (°C)	10	15	20	25	30	35	40
Revising coefficient	1.07	1.04	1	0.96	0.93	0.89	0.84

Effect of air temperature

Air temperature (°C)	10	20	25	30	35	40	50
Revising coefficient	0.07	1	0.96	0.93	0.89	0.84	0.76

Effect of Space between cables

Space between cables (mm)	150	200	250	270	300	350	400
Revising coefficient	0.88	0.95	1.00	1.01	1.03	1.06	1.08